p

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,717	12/22/2000	David M. Pangrac	ADVENT001US	4536

28722 7590 02/08/2005

BRACEWELL & PATTERSON, L.L.P.
P.O. BOX 969
AUSTIN, TX 78767-0969

EXAMINER	
SALTARELLI, DOMINIC D	
ART UNIT	**PAPER NUMBER**
2611	

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/748,717	PANGRAC ET AL.	
	Examiner	Art Unit	
	Dominic D Saltarelli	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22,24-41 and 44-78* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *34-41 and 44-58* is/are allowed.

6)☒ Claim(s) *1-22,24-33 and 59-78* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 15 is objected to because of the following informalities: Lines 6 and 7 contain the phrase "RE signal" and should be changed to --RF signal--.

2. Claim 22 is objected to because of the following informalities: Line 2 reads "(BFC)" and should be changed to --(HFC)--. Line 14 reads "joint of distribution" and should be changed to --point of distribution--.

3. Claim 24 is objected to because of the following informalities: Line 1 reads "claim 23" and should be changed to --claim 22--.

4. Claim 25 is objected to because of the following informalities: Line 1 reads "claim 23" and should be changed to --claim 22--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 59-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Williams et al. (5,808,767, of record) [Williams].

Regarding claim 59, Williams discloses a communication system for distributing information via an optical network (fig. 6), comprising;

An optical plant (fig. 6, optical fibers 104 and $612_{1..N}$) ;

A point of distribution (CO in fig. 1), comprising:

A multi-port switch (input interface to MAC 105 in fig. 1 that includes the discrete switches 106-110, col. 6 line 49 – col. 7 line 3 and col. 9, lines 40-47) that forwards source information for each of a plurality of subscriber destinations to a corresponding port (col. 6 line 66 – col. 7 lines 3);

A plurality of optical transceivers (fig. 4, transmitter array 401 and receiver 403), each optical transceiver coupled to one of the plurality of ports of the switch to convert information received from a respective port to a respective one of a plurality of optical source signals (each discrete wavelength carries an optical source signal, col. 10, lines 25-33), and each optical transceiver assigned to a subscriber destination to allocated unshared bandwidth to assigned subscriber destinations (each transceiver operates on a distinct wavelength, col. 10, lines 18-33, wherein the wavelengths are dynamically assigned to subscriber destinations, col. 8, lines 24-31); and

A wavelength division multiplexing (WDM) combiner (optical combiner/coupler for multi-IC arrays, col. 10, lines 34-43 and col. 12, lines 7-15) that combines an optical source signal from each of the plurality of optical transceivers into a combined optical signal and that transmits the combined signal onto the optical plant (col. 9 line 65 – col. 10 line 8 and col. 10 lines 34-43);

A plurality of fiber optic cables, each routed to a corresponding one of a plurality of subscriber destinations (fig. 5, col. 12, lines 45-60); and

A WDM selector (fig. 5, WDS 501, 502), coupled to the optical plant, that receives and separates the combined optical signal from the WDM combiner into its individual optical signal components, and that forwards each separate optical signal over a corresponding one of the plurality of fiber optic cables to the subscriber destinations (col. 12, lines 50-60).

Regarding claim 60, Williams discloses the system of claim 59, and discloses the switch comprises an optical switch (MAC 105 performs switching on all optical signals, as seen in fig. 5, the MAC 105 receives optical signals from SONET ADD/DROP location 601 and routes said optical signals to optical coupler 611, col. 14, lines 23-28).

Regarding claim 61, Williams discloses the system of claim 59, and discloses a plurality of gateway devices (fig. 1, IID 101, col. 6, lines 30-34 and col. 7 lines 18-23), each located at a respective subscriber destination and coupled to a respective one of the plurality of fiber optic cables (fig. 1, fiber 104).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-3, 5, 6, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara et al. (4,533,948, of record) [McNamara] in view of Binns et al. (5,329,308) [Binns] and Darcie (4,701,904).

Regarding claim 1, McNamara discloses a method of distributing information (col. 3 line 64 – col. 4 line 21) by a point of distribution (fig. 3, headend 10) to subscribers (fig. 3, subscriber nodes) via a communication network (fig. 3, network 28), comprising:

Dividing a television broadcast spectrum into a plurality of subscriber channels (col. 5, lines 21-26), each subscriber channels having a deterministic bandwidth (each channel is set to be capable of a 128 Kb/s transmission rate);

Allocating bandwidth to each of a plurality of subscriber destinations (col. 5, lines 32-39);

Assigning each of the subscriber destinations to a subscriber channel (col. 5, lines 32-39);

Forwarding source information to each subscriber destination based on assigned subscriber channels (source nodes send information to user nodes through the headend, col. 4 line 60 – col. 5 line 20, using the assigned channels, col. 7 line 62 – col. 8 line 24);

Modulating forwarded source information for each subscriber channel (FSK modulator 16 in headend 10, col. 4, lines 30-54);

Combining modulated forwarded source information from each subscriber channel into a combined signal (there are at least 80 disclosed FSK data channels in the forward and return spectrum space handled by the headend, col. 5, lines 21-31, thus it is a combined signal of at least 80 channels which is broadcast from the headend); and

Distributing the combined signal to the plurality of subscriber destinations via the communication network (col. 4, lines 9-21).

McNamara fails to disclose up converting modulated forwarded source information into a corresponding one of the subscriber channels and the bandwidth allocated to each of a plurality of subscriber destinations is unshared, in the sense that only a given subscriber destination from among the plurality of subscriber destinations forwards or receives information utilizing it's allocated unshared bandwidth.

In an analogous art, Binns teaches up converting modulated source information into corresponding subscriber channels (fig. 4, outputs of baseband to IF modulators 332 and 333 provide modulated source information which is then applied to IF to Downstream channel modulators 328 and 329 which up convert the modulated source information into corresponding subscriber channels, col. 17, lines 15-28), for transmitting analog source information over a cable network (fig. 3, cable distribution network).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara to include up converting modulated source information into a corresponding one of the subscriber channels, as taught by Binns, for the benefit of increased network flexibility by handling analog signals as well as digital.

McNamara and Binns fail to disclosed the bandwidth allocated to each of a plurality of subscriber destinations is unshared, in the sense that only a given subscriber destination from among the plurality of subscriber destinations forwards or receives information utilizing it's allocated unshared bandwidth.

In an analogous art, Darcie teaches an optical communication system (fig. 1, col. 3, lines 5-15) wherein system bandwidth is allocated to a plurality of subscribers via a plurality of channels comprising unshared bandwidth, wherein each subscriber is allocated a particular channel (col. 3, lines 16-42), providing maximum use of the available frequency spectrum while entirely avoiding contention problems for multiple users (col. 1 line 65 – col. 2 line 31).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara and Binns to include allocating unshared bandwidth to each of a plurality of subscriber destinations, wherein only a given subscriber destination from among the plurality of subscriber destinations receives information utilizing its allocated unshared bandwidth, as taught by Darcie, for the benefit of eliminating any contention problems that would otherwise arise from the use of the system by multiple users.

Regarding claim 2, McNamara, Binns, and Darcie disclose the method of claim 1, and further disclose dividing the television broadcast spectrum into an upstream portion and a downstream portion (McNamara, col. 3, lines 48-56, col. 4 lines 9-21, and col. 5, lines 21-26) and allocating each subscriber destination an unshared downstream bandwidth and an unshared upstream bandwidth (McNamara, col. 5, lines 21-39).

Regarding claim 3, McNamara, Binns, and Darcie disclose the method of claim 2, and further disclose each subscriber channel includes a downstream subscriber channel in the downstream portion and an upstream subscriber channel in the upstream portion (McNamara, col. 5, lines 21-39).

Regarding claim 5, McNamara, Binns, and Darcie disclose the method of claim 1, and further disclose receiving source information from a plurality of content servers (McNamara, fig. 3, server nodes 46, col. 5 lines 63-67) in the form of data packets (McNamara, fig. 9, frame message 120, col. 9, lines 62-65) and the forwarding comprising forwarding the received source information based on address information within the data packets (McNamara, col. 10, lines 25-31).

Regarding claim 6, McNamara, Binns, and Darcie disclose the method of claim 1, and further disclose tracking actual bandwidth usage of each subscriber

destination (by NTM 32 for billing and load leveling statistics, McNamara, col. 6 line 66 – col. 7 line 8).

Regarding claim 19, McNamara, Binns, and Darcie disclose the method of claim 1, and further disclose receiving a physical address request from a subscriber destination (received by NRM 36, McNamara, col. 6, lines 56-65), retrieving the requested physical address from a stored address database (McNamara, col. 7 line 62 – col. 8 line 6) and forwarding the retrieved physical address to the requesting subscriber destination (McNamara, col. 7 line 62 – col. 8 line 6).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, and Darcie as applied to claim 1 above, and in further view of Hooper et al. (5,442,390, of record) [Hooper].

Regarding claim 4, McNamara, Binns, and Darcie disclose the method of claim 1, but fail to disclose subdividing at least one subscriber channel into a plurality of bandwidth increments and assigning multiple subscriber destinations to the subscriber channel, each of the multiple subscriber destinations being allocated bandwidth increments of the subscriber channel.

In an analogous art, Hooper teaches establishing fixed point-to-point bandwidths (col. 5, lines 20-23) by subdividing a channel into bandwidth increments (use of frequency division multiplexing to partition a channel into sub-

channels, col. 5, lines 20-31), increasing the number of subscribers to which services are provided.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include subdividing a subscriber channel into a plurality of bandwidth increments and assigning multiple subscriber destinations to the subscriber channel, each of the multiple subscriber destinations being allocated bandwidth increments of the subscriber channel, as taught by Hooper, for the benefit of increasing the number of subscriber destinations to which services can be provided over the given bandwidth portion.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, and Darcie as applied to claim 6 above, and in further view of Bigham et al. (5,544,161, of record) [Bigham].

Regarding claim 7, McNamara, Binns, and Darcie disclose the method of claim 6, but fail to disclose monitoring source information by service type provided to a subscriber destination and tracking bandwidth usage of the subscriber destination for each service type.

In an analogous art, Bigham teaches monitoring source information by service type provided to a subscriber destination (the level 1 gateway monitors the connections between subscribers and service providers, col. 15 line 53 – col. 16 line 8 and col. 16, lines 28-34, 40-48) and tracks the bandwidth usage of each

subscriber destination for each service type (the gateway monitors actual bandwidth usage as the link is active, col. 15, lines 60-63), for the benefit of accurate billing of subscribers for services rendered.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include monitoring source information by service type provided to a subscriber destination and tracking bandwidth usage of the subscriber destination for each service type, as taught by Bigham, for the benefit of accurate billing of subscribers for information services rendered to subscriber destinations.

11. Claims 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, and Darcie as applied to claim 1 above, and further in view of Hoarty et al. (5,526,034, of record) [Hoarty].

Regarding claim 8, McNamara, Binns, and Darcie disclose the method of claim 1, but fail to disclose dividing a substantial portion of the television broadcast spectrum into the plurality of subscriber channels.

In an analogous art, Hoarty teaches allocating a substantial portion of the television broadcast spectrum for use in interactive television information signals (fig. 31, spectrum portion 317, col. 18, lines 23-33 and the band for interactive channels in fig. 10), providing services to a large number of different subscribers (col. 8, lines 40-58).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include dividing a substantial portion of the television broadcast spectrum into the plurality of subscriber channels, as taught by Hoarty, for the benefit of providing the information services to a large number of different subscriber locations.

Regarding claim 9, McNamara, Binns, and Darcie disclose the method of claim 1, and further disclose receiving information in packetized format (McNamara teaches head end 10 receives all frame messages, col. 5, lines 1-12, which are in packet format, col. 9 line 62 – col. 10 line 8) and forwards the packetized information (McNamara, col. 5, lines 6-12) to a subscriber channel (McNamara, col. 5, lines 21-26, 32-39) assigned to the subscriber destination (forwarding is based address of destination which is coupled to channel frequency, McNamara, col. 7, lines 26-33 and col. 7 line 62 – col. 8 line 6), but fails to disclose receiving a request for video information from a subscriber destination.

In an analogous art, Hoarty teaches transmitting video information to subscribers on a demand basis (col. 18, lines 36-48 and col. 8, lines 40-49), providing a wide array of video services to interested subscribers (col. 19, lines 20-47).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include

receiving a request for video information from a subscriber destination, as taught by Hoarty, for the benefit of providing a wide array of video services of which are individually selectable by interested subscribers from subscriber destinations.

Regarding claim 10, Hoarty additionally teaches the video information is a broadcast television channel (col. 8, lines 25-30), conserving bandwidth or widening the selections available to subscribers (col. 8, lines 30-33).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Darcie, and Hoarty to include the video information is a broadcast television channel, as additionally taught by Hoarty, for the benefit of conserving bandwidth in the communication network or increasing the amount of material available for selection by subscribers.

Regarding claim 11, McNamara, Binns, and Darcie disclose the method of claim 1, but fail to disclose allocating broadcast television channels within a predetermined frequency range of the television broadcast spectrum, dividing the plurality of subscriber channels into a remaining portion of the television broadcast spectrum outside the predetermined frequency range allocated to the broadcast television channels, and combining the broadcast television channels into the combined signal.

In an analogous art, Hoarty teaches allocating broadcast television channels within a predetermined frequency range of the television broadcast spectrum (col. 6, lines 25-35 and fig. 31, broadcast spectrum portion 315), dividing a plurality of subscriber channels [interactive/virtual channels] into a remaining portion of the television broadcast spectrum (fig. 31, broadcast spectrum portion 317) outside the predetermined frequency range allocated to the broadcast television channels (col. 17 line 66 – col. 18 line 4 and col. 18, lines 23-35), and combining the broadcast television channels into a combined signal (fig. 9, col. 9, lines 13-36), for the benefit of providing both interactive services and traditional broadcast programming such that they do not interfere with each other upon broadcast and reception (use of guardbands 318 ensure this, col. 18, lines 31-33).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include allocating broadcast television channels within a predetermined frequency range of the television broadcast spectrum, dividing the plurality of subscriber channels into a remaining portion of the television broadcast spectrum outside the predetermined frequency range allocated to the broadcast television channels, and combining the broadcast television channels into the combined signal, as taught by Hoarty, for the benefit of providing both interactive information services and traditional broadcast television programming such that they do not interfere

with each other upon broadcast from the point of distribution and reception at the subscriber destinations.

Regarding claim 12, McNamara, Binns, Darcie, and Hoarty disclose the method of claim 11, wherein a first portion of the remaining portion of the television broadcast spectrum is allocated to downstream subscriber channels (McNamara, fig. 1, frequency band 4, col. 3, lines 57-63) and a second portion of the remaining portion of the television broadcast spectrum is allocated to upstream subscriber channels (McNamara, fig. 1, frequency band 2, col. 3, lines 57-63).

Regarding claim 13, McNamara, Binns, Darcie, and Hoarty disclose the method of claim 12, wherein each subscriber channel comprises a respective downstream subscriber channel and a respective upstream subscriber channel, each having dedicated and unshared bandwidth (McNamara, "home channel", col. 5, lines 21-39).

12. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, and Darcie as applied to claim 1 above, and further in view of Paik et al. (5,136,411, of record) [Paik].

Regarding claim 14, McNamara, Binns, and Darcie disclose the method of claim 1, but fail to disclose converting the combined signal into an optical signal

and transmitting the optical signal on an optical plant to an optical transceiver node.

In an analogous art, Paik teaches an HFC network (fig. 1, col. 3, lines 48-56), wherein a combined electrical signal is converted to an optical signal at the head end and transmitted (combined signal from several sources is converted to an optical signal before transmission by the head end, col. 3, lines 57-67) to an optical receiver node (fig. 1, distribution terminal 12) via an optical plant (fig. 1, optical fiber 16), wherein HFC networks are a cost efficient form of long distance signal transmission (col. 1 line 66 – col. 2 line 7).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include converting the combined signal into an optical signal, and transmitting the optical signal to an optical transceiver node via an optical plant, as taught by Paik, for the benefit of utilizing a more effective and cost efficient form of long distance signal transmission to subscriber destinations.

13. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, and Darcie as applied to claim 1 above, and further in view of Eng (6,370,153, of record).

Regarding claim 15, McNamara, Binns, Darcie disclose the method of claim 1, and further disclose receiving a combined upstream signal from the communication network (McNamara, col. 4, lines 9-21), splitting the upstream

signal into multiple streams of subscriber information (taught by McNamara, an inherent feature of the head end in fig. 2, as having a plurality of DCAM modules [11a, 11b, etc...] requires some form of signal splitting to couple the upstream input from the common cable 25 [fig. 3] to each DCAM module), demodulating a return RF signal into packetized subscriber information, and forwarding the packetized subscriber information (McNamara, col. 5, lines 1-12), but fails to disclose providing each stream of subscriber information to a corresponding one of a plurality of tuners, each tuner tuned to a corresponding subscriber channel and extracting by each tuner a corresponding RF signal.

In an analogous art, Eng teaches providing separate streams of subscriber information (from diplex filter 252 in fig. 14) to a corresponding one of a plurality of tuners (tuners 258 and 259), each tuner tuned to a corresponding subscriber channel and extracting by each tuner a corresponding RF signal (col. 18, lines 45-65, each upstream channel is sent to a separate tuner, and the use of two is illustrative, as the invention contemplates using a plurality of channels which would in turn require a plurality of tuners to extract data from each, col. 11, lines 11-20), enabling flexible, frequency agile reception of upstream information (each tuner is 'frequency agile', col. 18, lines 45-48 and 59-61).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include providing each stream of subscriber information to a corresponding one of a plurality of tuners, each tuner tuned to a corresponding subscriber channel and

extracting by each tuner a corresponding RF signal, as taught by Eng, for the benefit of flexible, frequency agile reception of subscriber information.

Regarding claim 16, Eng additionally discloses receiving an optical signal and converting the optical signal into a combined upstream signal (performed by optical receiver 38 in fig. 1, col. 11, lines 1-4), wherein utilizing fiber optics for signal transmission is well known to have very high bandwidth and superior propagation properties.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Darcie, and Eng to include receiving an optical signal and converting the optical signal into a combined upstream signal, as taught by Eng, for the benefit of utilizing fiber optics for signal transmission which are well known to have very high bandwidth, as compared to traditional coaxial cable, and superior propagation properties, such a lower signal loss over distance.

14. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, and Darcie as applied to claim 1 above, and in further view of Williams.

Regarding claim 17, McNamara, Binns, and Darcie disclose the method of claim 1, but fail to disclose detecting a request by a subscriber for increased

bandwidth and increasing the allocated unshared bandwidth to the subscriber destination in accordance with the increased bandwidth request.

In an analogous art, Williams teaches detecting a request by a subscriber for increased bandwidth and increasing the allocated unshared bandwidth to the subscriber destination in accordance with the increased bandwidth request (col. 11, lines 33-42), providing the user with more bandwidth to facilitate large data transfers.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method of McNamara, Binns, and Darcie to include detecting a request by a subscriber for increased bandwidth and increasing the allocated unshared bandwidth to the subscriber destination in accordance with the increased bandwidth request, as taught by Williams, for the benefit of facilitating large data transfers the user wishes to initiate more quickly through the allocation of additional bandwidth to the subscriber destination of the user.

Regarding claim 18, McNamara, Binns, and Darcie disclose the method of claim 1, but fail to disclose detecting a request by a subscriber destination for a service that would require a greater amount of bandwidth than currently allocated to the requesting subscriber destination and increasing the allocated unshared bandwidth to the requesting subscriber destination to handle the requested service.

In an analogous art, Williams teaches detecting a request by a subscriber destination for a service (user inputs request into IID 101 for video on demand service, col. 8, lines 7-11,19-24), wherein if the service requested exceeds the traffic capacity of the assigned channel, the allocated unshared bandwidth is increased to handle the requested service (col. 17, lines 2-15), more effectively utilizing bandwidth overall through dynamic allocation of bandwidth on an on demand basis (col. 5, lines 35-40)

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to include detecting a request by a subscriber destination for a service that would require a greater amount of bandwidth than currently allocated to the requesting subscriber destination and increasing the allocated unshared bandwidth to the requesting subscriber destination to handle the requested service, as taught by Williams, for the benefit of more effectively utilizing bandwidth of the communication network through dynamic allocation of bandwidth to subscriber destinations on an on demand basis.

15. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, and Darcie as applied to claim 1 above, and in further view of Perlman (5,420,862, of record).

Regarding claim 20, McNamara, Binns, and Darcie disclose the method of claim 19, but fail to disclose forwarding a broadcast address resolution protocol

request in an attempt to locate a device having the requested physical address if the requested physical address is not found.

In an analogous art, Perlman teaches using Address Resolution Protocol (ARP) messages to 'learn' the physical address of a desired receiving station (col. 4, lines 41-60) in the event that the physical address is not known, but desired, maintaining point to point functionality in the event the database is incomplete, maintaining the desired point-to-point connections.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Darcie to forward a broadcast address resolution request in an attempt to locate a desired device's physical address, as taught by Perlman, for the benefit of preserving the point-to-point integrity of the method.

16. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, Darcie, and Perlman as applied to claim 20 above, and further in view of Denker (5,958,053, of record).

Regarding claim 21, McNamara, Binns, Darcie, and Perlman disclose the method of claim 20, but fail to disclose detecting and halting abuse of address requests by a subscriber device.

In an analogous art, Denker teaches tracking the activity of clients from a server, wherein excessive connection attempts result in blocking a client from

further attempts to prevent abuse of the system (col. 11, lines 25-50), for the benefit of maintaining the integrity of the server.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Darcie, and Perlman to include detecting and halting abuse by subscriber devices, as taught by Denker, for the benefit of maintaining the integrity of the information distribution method.

17. Claims 22, 23, 25, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, Paik, and Gerszberg et al. (6,510,152) [Gerszberg].

Regarding claim 22, McNamara discloses a method of distributing information (col. 3 line 64 – col. 4 line 21) by a point of distribution (fig. 3, headend 10) to subscribers (fig. 3, subscriber nodes) via a communication network (fig. 3, network 28), comprising:

Dividing a television broadcast spectrum into a plurality of subscriber channels (col. 5, lines 21-26), each subscriber channel having a deterministic bandwidth (each channel is set to be capable of a 128 Kb/s transmission rate);

Assigning each of the subscriber destinations to a subscriber channel (col. 5, lines 32-39);

Allocating unshared bandwidth to each of a plurality of subscriber destinations (col. 5, lines 32-39);

Forwarding, by the point of distribution, source information to each subscriber destination based on assigned subscriber channels (source nodes send information to user nodes through the head end, col. 4 line 60 – col. 5 line 20, using the assigned channels, col. 7 line 62 – col. 8 line 24);

Modulating, by the point of distribution, source information for each subscriber channel (FSK modulator 16 in headend 10, col. 4, lines 30-54);

Combining, by the point of distribution, modulated information from each subscriber channel into a combined signal (there are at least 80 disclosed FSK data channels in the forward and return spectrum space handled by the headend, col. 5, lines 21-31, thus it is a combined signal of at least 80 channels which is broadcast from the headend); and

Distributing the combined signal to the plurality of subscriber destinations via the communication network (col. 4, lines 9-21).

McNamara fails to disclose:

- up converting modulated source information into a corresponding one of the subscriber channels
- the communication network is a hybrid fiber coax (HFC) delivery plant
- converting, by the point of distribution, the combined signal into an optical signal;
- transmitting, by the point of distribution, the optical signal to an optical transceiver node via an optical plant;

- converting, by the optical transceiver node, the optical signal into a combined electrical signal;
- transmitting, by the optical transceiver node, the combined electrical signal via a coaxial cable to each of the plurality of subscriber destinations;
- extracting, by a gateway device at a subscriber destination, modulated information from an assigned channel of the combined electrical signal;
- demodulating, by the gateway device, source information from the extracted modulated information; and
- forwarding, by the gateway device and as a function of an address embedded in the source information identifying a subscriber device from among a plurality of subscriber devices at the subscriber destination, demodulated source information to an identified subscriber device at the subscriber destination addressed by the address embedded in the source information.

In an analogous art, Binns teaches up converting modulated source information into corresponding subscriber channels (fig. 4, outputs of baseband to IF modulators 332 and 333 provide modulated source information which is then applied to IF to Downstream channel modulators 328 and 329 which up convert the modulated source information into corresponding subscriber

channels, col. 17, lines 15-28), transmitting analog source information over a cable network (fig. 3, cable distribution network).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara to include up converting modulated source information into a corresponding one of the subscriber channels, as taught by Binns, for the benefit of increased network flexibility by handling analog signals as well as digital.

McNamara and Binns fail to disclose:

- the communication network is a hybrid fiber coax (HFC) delivery plant
- converting, by the point of distribution, the combined signal into an optical signal;
- transmitting, by the point of distribution, the optical signal to an optical transceiver node via an optical plant;
- converting, by the optical transceiver node, the optical signal into a combined electrical signal;
- transmitting, by the optical transceiver node, the combined electrical signal via a coaxial cable to each of the plurality of subscriber destinations;
- extracting, by a gateway device at a subscriber destination, modulated information from an assigned channel of the combined electrical signal;

- demodulating, by the gateway device, source information from the extracted modulated information; and
- forwarding, by the gateway device and as a function of an address embedded in the source information identifying a subscriber device from among a plurality of subscriber devices at the subscriber destination, demodulated source information to an identified subscriber device at the subscriber destination addressed by the address embedded in the source information.

In an analogous art, Paik teaches an HFC network (fig. 1, col. 3, lines 48-56), wherein a combined electrical signal is converted to an optical signal at the head end and transmitted (combined signal from several sources is converted to an optical signal before transmission by the head end, col. 3, lines 57-67) to an optical receiver node (fig. 1, distribution terminal 12) via an optical plant (fig. 1, optical fiber 16), where it is converted into a combined electrical signal (col. 4, lines 3-13) and transmitted via coaxial cable (fig. 1, cable 18) to each of a plurality of subscriber destinations (col. 4, lines 3-13), wherein HFC networks are a cost efficient form of long distance signal transmission (col. 1 line 66 – col. 2 line 7).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara and Binns to include an HFC delivery plant wherein the point of distribution (head end) converts the combined electrical signal into an optical signal, transmits the optical signal to an optical

transceiver node via an optical plant, converting the optical signal into a combined electrical signal at the optical transceiver node, and transmitting the combined electrical signal via a coaxial cable to each of a plurality of subscriber destinations, as taught by Paik, for the benefit of utilizing a more effective and cost efficient form of long distance signal transmission to subscriber destinations.

Paik additionally discloses receiving a combined signal at a gateway device (fig. 4, subscriber terminal 14, col. 9, lines 3-8) and extracts modulated information from a channel (using directional coupler 94 and programmable FM tuner 96 in fig. 4), wherein source information is demodulated (fig. 4, FM demodulator 98) and forwarded to subscriber devices at the subscriber destination (output 112 from signal processor 100 goes to connected subscriber device, col. 9, lines 40-43), providing the benefit of offering a variety of services simultaneously from a single subscriber destination (col. 9, lines 3-15, 33-43).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Paik to include extracting, by a gateway device at a subscriber destination, modulated information from an assigned channel, demodulating, by the gateway device, source information from the extracted modulated information, and forwarding, by the gateway device, demodulated source information to a subscriber device at the subscriber destination, as taught by Paik, for the benefit of offering a variety of services simultaneously over the communication network to customers from a single subscriber destination.

McNamara, Binns, and Paik fail to disclose:

- forwarding, by the gateway device and as a function of an address embedded in the source information identifying a subscriber device from among a plurality of subscriber devices at the subscriber destination, demodulated source information to an identified subscriber device at the subscriber destination addressed by the address embedded in the source information.

In an analogous art, Gerszberg teaches a gateway device (fig. 1E, residential gateway 22) which forwards information based on source information identifying a subscriber device from a plurality of subscriber devices at a subscriber destination (said gateway forwards received data as appropriate, most notably, it forwards data onto an Ethernet network, which requires a device address for proper routing, col. 7, lines 30-53), for the benefit of simultaneously providing several types of disparate, independent services (computer data, telephone, and CATV, col. 5, lines 52-67) from said gateway device.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, and Paik to include forwarding, by the gateway device and as a function of an address embedded in the source information identifying a subscriber device from among a plurality of subscriber devices at the subscriber destination, demodulated source information to an identified subscriber device at the subscriber destination addressed by the address embedded in the source information, as taught by Gerszberg, for the

benefit of simultaneously providing several types of disparate, independent services, such as digital telephone and computer data services, in addition to television services, from said gateway device.

Regarding claim 25, Paik additionally teaches splitting broadcast information from a received combined electrical signal (subscriber terminal 14 receives combined signal and tunes to broadcast information on a given frequency for display, col. 4, lines 13-24), for the benefit of increasing the choices available to subscribers by including broadcast content (col. 3, lines 57-67).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Paik, and Gerszberg to include splitting broadcast information from the combined electrical signal, as taught by Paik, for the benefit of increasing the viewing choices available to subscribers by including broadcast content in the combined electrical signal for extraction and viewing.

Regarding claim 32, McNamara, Binns, Paik, and Gerszberg disclose the method of claim 22, which sends, by a bandwidth manager (network resource manager), a channel switch command to the subscriber destination wherein the subscriber destination switches from an assigned channel to another channel in response to said switch command (McNamara, col. 5, lines 32-39).

McNamara, Binns, Paik, and Gerszberg fail to disclose the bandwidth manager is at the point of distribution and the command is received by a gateway device which also performs the switching.

McNamara teaches the system control nodes (including NRM 36) may be located anywhere (col. 6, lines 25-38), and the most logical place to put a system control resource is physically proximate to the head end, for maintenance and security reasons.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclose by McNamara, Binns, Paik, and Gerszberg to locate the address resolution device at the head end, in order to more closely monitor and maintain all of the hardware which performs the data storage and data routing.

Paik teaches using a gateway (fig. 4, subscriber terminal 14) which controls the distribution of data to several subscriber devices (individual subscriber equipment sets 90 within subscriber terminal 14 provide the interface for supplying data to subscriber devices such as TVs and VCRs, col. 9, lines 3-14, 40-43), simultaneously offering network services to a plurality of devices.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Paik, and Gerszberg to include a gateway, as taught by Paik, which would perform the disclosed switch command (McNamara, col. 5, lines 32-39) by the 'programmable tuner' (tuner 96 in fig. 4 of Paik, as a remote channel switch command is directed toward tuner

control, and the tuner is located in the gateway device), for the benefit of offering a variety of services simultaneously over the communication network to customers from a single subscriber destination.

Regarding claim 33, Paik teaches receiving, by the optical transceiver node (fig. 3, distribution terminal 12), a plurality of upstream subscriber RF signals from the subscriber destinations (col. 8 line 65 – col. 9 line 2), combining by the optical transceiver node, the upstream subscriber RF signal into a combined upstream signal (fig. 1, the distribution terminal collects RF signals from several subscriber terminals over coax 18 from transmission over a single fiber 16), converting, by the optical transceiver node, the combined upstream signal into an optical upstream signal (via laser driver 78 in fig. 3), and transmitting by the optical transceiver node, the optical upstream signal via an optical plant to the point of distribution (optical upstream signal is transmitted through WDM 70 over fiber 16 to head end 10).

18. Claims 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, Paik, and Gerszberg as applied to claims 22 and 25 above, and further in view of Williams.

Regarding claims 24 and 26, McNamara, Binns, Paik, and Gerszberg disclose the method of claims 22 and 25, but fail to disclose converting, by a

gateway device, source information into a format appropriate for a subscriber device.

Williams teaches converting, by a gateway device, source information into a format appropriate for a subscriber device (a received video signal is formatted for display on a television set, col. 9, lines 59-64), maximizing the flexibility of the gateway device in delivering services to customers through scalable, modular, compatibility with subscriber devices (service definition modules provide compatibility with a wide variety of devices, col. 7 line 26 – col. 8 line 18).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Paik, and Gerszberg to include converting, by a gateway device, demodulated source information into a format appropriate for the addressed subscriber device, as taught by Williams, for the benefit of maximizing the flexibility of the gateway device in delivering services to customers through scalable, modular, compatibility with the addressed subscriber devices.

19. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, Paik, and Gerszberg as applied to claim 22 above, and further in view of Eng.

Regarding claim 27, McNamara, Binns, Paik, and Gerszberg disclose the method of claim 22, but fail to disclose modulating, by a gateway device at a subscriber destination, subscriber information from a subscriber device, up

converting, by the gateway device, the modulated subscriber information to a radio frequency (RF) signal and transmitting, by the gateway device, the subscriber RF signal to the optical transceiver node via the coaxial cable.

Paik additionally discloses modulating, by a gateway device at a subscriber destination (fig. 4, subscriber terminal 14), subscriber information from a subscriber device (service request signal is modulated by FSK modulator, col. 9, lines 50-63), and transmitting (signal is upstream, col. 8 line 65 - col. 9 line 2), by the gateway device, the subscriber RF signal to the optical transceiver node (fig. 1, distribution terminal 12) via the coaxial cable (fig. 1, coaxial cable 18), enabling subscribers to make requests for desired content (col. 3, lines 57-67).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Paik, and Gerszberg to include modulating, by a gateway device at a subscriber destination subscriber information from a subscriber device, and transmitting, by the gateway device, the subscriber RF signal to the optical transceiver node via the coaxial cable, for the benefit of enabling subscribers to make requests for desired content.

In an analogous art, Eng teaches up converting modulated subscriber information (fig. 10A, tuner 178 up converts a modulated signal onto an assigned upstream band, col. 13, lines 1-15), for the benefit of dynamically placing the modulated signal onto desired bands (col. 13, lines 15-19).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method of McNamara, Binns, Paik, and Gerszberg to include up

converting by a gateway device, modulated subscriber information, as taught by Eng, for the benefit of dynamically placing the modulated signal onto desired bands, such as low noise bands.

Regarding claim 28, Paik additionally discloses storing the subscriber information in digital format (the subscriber request comes from RCU 114 and is in digital format because it is stored in microcomputer 102, col. 9, lines 50-54), requiring the information to be converted into digital format if it is not in digital format already, enabling the subscriber information to be processed by the computer systems which control the flow of information throughout the network.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Paik, and Gerszberg to include handling the subscriber information in digital format, as taught by Paik, requiring the information to be converted into digital format if it is not in digital format already, for the benefit of enabling the subscriber information to be processed by the computer systems which control the flow of information throughout the network and because data signals are known to be a very robust form of data signals.

20. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, Paik, Gerszberg, and Eng as applied to claim 27 above, and further in view of Perlman.

Regarding claim 29, McNamara, Binns, Paik, Gerszberg, and Eng disclose the method of claim 27, wherein the gateway device receives a physical address request (McNamara discloses requesting the physical addresses of other nodes, as messages sent to the NRM 36 include the symbolic name of the destination node with which the originating device wishes to establish contact, col. 7 line 62 – col. 8 line 6) where it is converted to a unicast packet format (McNamara teaches messages transmitted over the network are all uniquely addressed for reception by a particular node, col. 7, lines 26-33 and are assembled as such before transmission, col. 10, lines 9-11) and forwarded to an address resolution device (McNamara, fig. 3, NRM 36, col. 7 line 62 – col. 8 line 6).

McNamara, Binns, Paik, Gerszberg, and Eng fail to disclose the address resolution device is located at the head end and the physical address request is in broadcast packet format.

McNamara teaches the system control nodes (including NRM 36) may be located anywhere (col. 6, lines 25-38), and the most logical place to put a resource which contains a database of all channel assignments and physical addresses (col. 6, lines 56-65) is physically proximate to the head end, for maintenance and security reasons.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclose by McNamara, Binns, Paik, Gerszberg, and Eng to locate the address resolution device at the head end, in order to more

closely monitor and maintain all of the hardware which performs the data storage and data routing.

In an analogous art, Perlman teaches the use of Address Request Protocol messages (a broadcast packet format) as a common means by which devices which communicate with TCP/IP type protocols locate each other (col. 4, lines 41-60).

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Paik, Gerszberg, and Eng to include receiving the physical address request in a broadcast packet format, as taught by Perlman, for the benefit of adaptably receiving address requests from devices which communicate using TCP/IP type protocols, such as computers with modems, enhancing the service by increasing the diversity of subscriber devices which it can accommodate for receiving information services.

21. Claims 30 and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara, Binns, Paik, and Gerszberg as applied to claim 22 above, and further in view of Wonfor et al. (6,381,747, of record) [Wonfor].

Regarding claims 30 and 31, McNamara, Binns, Paik, and Gerszberg disclose the method of claim 22, and additionally disclose a bandwidth manager (NTM 32 working with NRM 36, McNamara, col. 6 line 48 – col. 7 line 7), but fail to disclose the gateway tracks and forwards bandwidth usage information for

each of a plurality of service types and that the bandwidth manager is located at the point of distribution.

McNamara teaches the system control nodes (including NRM 36 and NTM 32) may be located anywhere (col. 6, lines 25-38), and the most logical place to put a resource which and handles sensitive information (such as billing information, col. 7, lines 3-5) is physically proximate to the head end, for maintenance and security reasons.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclose by McNamara, Binns, Paik, and Gerszberg to locate the bandwidth manager at the head end, in order to more closely monitor and maintain the hardware which handles and stores sensitive information.

In an analogous art, Wonfor teaches monitoring at a subscriber location the use of all services for which a customer must pay for, and reports the usage of said services back to a control and billing center (col. 5, lines 15-24), for the benefit of proper billing of customers for services rendered.

It would have been obvious at the time to a person of ordinary skill in the art to modify the method disclosed by McNamara, Binns, Paik, and Gerszberg to include tracking and forwarding bandwidth usage information from the subscriber location to the bandwidth manager, as taught by Wonfor, for the benefit of proper billing of customers for specifically those services rendered over the allocated bandwidth.

22. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoarty in view of Gilbert et al. (6,016,311, of record) [Gilbert].

Regarding claim 63, Hoarty discloses a communication system for enabling communication between a point of distribution and a plurality of subscriber destinations via a hybrid fiber coax network (fig. 7), comprising:

An optical plant (fig. 7, optical section of distribution plant 68b);

A point of distribution (fig. 7, head end 11), comprising;

A multi-port switch (fig. 5, switch 54) that forwards source information (output of MMCs 53 in fig. 5) for each subscriber destination (col. 7, lines 19-29, 54-61) to a corresponding port of the switch (information is routed to the line which feeds the appropriate modulator 55, fig. 5) based on address information (interactive services are addressed to the requesting subscriber, as MMCs are allocated on an on demand basis, col. 7, lines 19-29);

A plurality of modulators (fig. 5, modulators 55), each modulator coupled to a port of the switch, and each modulator operable to modulate and convert information received from a respective switch port to an RF signal (col. 7 lines 58-61) within a respective one of a plurality of subscriber channels ('virtual channels' in fig. 7, as the MMCs which provide services are assigned on an on demand basis, col. 7 line 66 – col. 8 line 4 and routed to subscriber specific virtual channels, col. 8, lines 40-49) of a television broadcast spectrum (fig. 31, 'interactive channels' 317 are the virtual channels described, and lie in the television broadcast spectrum);

Each of the plurality of subscriber channels having a deterministic bandwidth (the bandwidth is allocated dynamically and on demand, col. 12, lines 5-14) and assigned to one (channels are allocated per subscriber for various services, col. 8, lines 40-49) or more ('party lines' to MMCs, col. 12, lines 23-28) of the subscriber destinations, each subscriber destination being assigned an unshared bandwidth allocation ('virtual channels' operate at a fixed frequency that is assigned to a particular set top, col. 8, lines 40-49);

A combiner (fig. 5, RF combiner 56), coupled to the modulators, the combines modulated information from each modulator into a combined signal; and

A transmitter (fig. 5, transmitter 57), coupled to the combiner and the optical plant, that converts the combined signal to an optical signal (col. 7, lines 29-32) and that transmits the optical signal via the optical plant (fig. 5, fiber 58);

A coaxial cable (fig. 7, coax drops, 75a, 75b, 75c) distributed to a plurality of subscriber destinations (fig. 7, 76a, 76b, 76c); and

An optical transceiver node (fig. 7, transceivers 43a, 43b), coupled to the optical plant and the coaxial cable, that converts the optical signal to an electrical signal and that transmits the electrical signal to subscriber destinations via the coaxial cable (in an HFC network, signals are initially optical, converted to electrical, then routed to subscribers, col. 6, lines 25-61).

Hoarty fails to disclose using RF modems.

In an analgous art, Gilbert teaches using a modular modem bank (fig. 6, modem bank 130) in two-way communication between a point of distribution (fig. 6 illustrates cell site 104, col. 10, lines 60-62, which includes a video server control computer 128 or a video server, col. 10 line 60 – col. 11 line 3) and subscriber destinations (fig. 4, CPE 110, col. 11 lines 8-12), as using a modular bank of modems for both upstream and downstream communications allows the point of distribution to be optimally configured according to capacity needs (col. 11, lines 13-20).

It would have been obvious at the time to a person of ordinary skill in the art to replace the modulators disclosed by Hoarty with RF modems, as taught by Gilbert, for the benefit of optimally configuring the capacity of upstream/downstream communications of the point of distribution according to the specific needs of the system.

23. Claims 64-70 and 74-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoarty and Gilbert as applied to claim 63 above, and further in view of Williams.

Regarding claim 64, Hoarty and Gilbert disclose the system of claim 63, but fail to disclose a plurality of gateway devices, each located at a respective subscriber destination and coupled to the coaxial cable, each comprising a tuner, for coupling to the coaxial cable, that is tuned to an assigned subscriber channel

to extract modulated information from the electrical signal, and a demodulator, coupled to the tuner, that demodulates the extracted modulated information into source information.

In an analogous art, Williams teaches a gateway device at each subscriber premises (fig. 1, IID 101) coupled to a network, which selectively tune to and demodulate incoming signals (col. 12, lines 16-20) on assigned channels (assignment is performed by MAC 105, col. 8, lines 24-31), wherein a gateway device enables the benefit of offering a variety of services simultaneously over the communication network to customers from a single subscriber destination.

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Hoarty and Gilbert to include a gateway device coupled to the network at each subscriber location comprising a tuner and demodulator for extracting source information from the network, as taught by Williams, for the benefit of offering a wide variety of services simultaneously from the gateway to subscriber devices at the subscriber destination.

Regarding claims 65 and 66, Hoarty, Gilbert, and Williams disclose the system of claim 64, wherein the tuner is dynamically programmable to tune to multiple subscriber channels (Hoarty discloses the bandwidth allocated to subscriber locations is dynamically assigned 'on demand', col. 12, lines 7-14, requiring the subscriber locations by selectively tunable to the channels they are assigned when services are requested).

Regarding claim 67, Hoarty, Gilbert, and Williams disclose the system of claim 64, and further disclose the gateway device includes a gateway switch, coupled to the demodulator, that forwards source information to an addressed one of a plurality of subscriber devices. The gateway disclosed by Williams includes a 'level 3' layer of functionality which performs the switching of data to their appropriate destinations (col. 9, lines 1-14) after the 'level 1' layer of data extraction from the received signal takes place (col. 8, lines 51-67), thus a switch for performing the 'level 3' layer function is coupled to the demodulator which is a part of the preceding 'level 1' function, and the switch forwards the source information to the proper device. Each device is inherently addressed, because there are a plurality of them, and the gateway would require addressing each device in order to discriminate between them when routing the signals of so many disparate services (col. 9, lines 5-14) to subscriber devices that are connected to the gateway in a modular and interchangeable fashion (col. 7, lines 34-40).

Regarding claim 68, Hoarty, Gilbert, and Williams disclose the system of claim 67, and further disclose the gateway device comprises a plurality of converters (service definition modules 103, Williams, col. 7, lines 34-40), each coupled to the gateway switch, that convert source information to an appropriate format for a corresponding subscriber device (Williams, col. 7, lines 55-64).

Regarding claim 69, Hoarty, Gilbert, and Williams disclose the system of claim 68, but fail to disclose a set top box coupled to the gateway device and the gateway device including a video converter that converts source information into video data that is forwarded to the set top box.

However, Williams teaches the service definition modules of the gateway device generally provide network interfacing to any number of different devices over different mediums (including RF coaxial cable, col. 8, lines 7-18). Connecting a set top box to a service definition module which provides video data from the source information over an RF coaxial connection would be an obvious embodiment when utilizing the openly flexible gateway disclosed.

It would have been obvious at the time to a person of ordinary skill in the art to modify the system of Hoarty, Gilbert, and Williams to couple a set top box to the gateway device which would include a video converter that converts source information into video data that is forwarded to the set top box, for the benefit of further utilizing the flexibility offered by the gateway device.

Regarding claim 70, Williams additionally teaches a telephone coupled to the gateway device wherein the gateway device includes an audio converter that converts digital audio data from the source information into telephone analog signals that are provided to the telephone (ISDN terminal adapter 1001 performs

D/A and A/D conversion, col. 17, lines 16-32). This is a further example of the flexibility of the gateway device in providing services (col. 7, lines 44-45).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Hoarty, Gilbert, and Williams to include a telephone coupled to the gateway device wherein the gateway device includes an audio converter that converts digital audio data from the source information into telephone analog signals that are provided to the telephone, as taught by Williams, for the benefit of further enhanced flexibility of the gateway device through provisioning conventional services as well.

Regarding claims 74 and 75, Williams additionally discloses a splitter ('layer 1' functionality includes a splitter, as the extraction of data includes demultiplexing, col. 8, lines 60-67), for coupling to the network, that splits broadcast content from the received signal (broadcast services are one of the services eventually forwarded to service definition modules, col. 8, lines 7-11) and a video converter (MPEG decoder) coupled to the splitter, the converts digital information into analog format (col. 9, lines 59-64). This is a further example of the flexibility of the gateway device in providing services (col. 7, lines 44-45).

It would have been obvious at the time to a person of ordinary skill in the art to include a splitter and video converter, as taught by Williams, for the benefit

of further enhanced flexibility of the gateway device through provisioning conventional broadcast services as well.

Regarding claim 76, Williams additionally discloses the gateway devices include a modulator that modulates subscriber information from a subscriber device (MAC 102 which is located at the subscriber location, performs modulation, col. 12, lines 16-24, of subscriber information [upstream signals], col. 8, lines 19-24) and an up converter for sending the signal (over the 'narrowband signaling channel').

It would have been obvious at the time to a person of ordinary skill in the art to modify the system of Hoarty, Gilbert, and Williams to include in the gateway devices a modulator and up converter, as taught by Williams, for the benefit of enabling upstream communications from the subscriber destinations for making selections and requests for interactive services.

Regarding claim 77, Williams additionally teaches the gateway devices include a converter (ISDN terminal adapter 1001 in fig. 10) that converts the subscriber information into digital format (col. 17, lines 23-32), for the benefit of utilizing a digital protocol for data communications from analog devices, wherein digital signals are known to be more robust and less prone to error.

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Hoarty, Gilbert, and Williams, to include a

converter, as taught by Williams, for the benefit of utilizing a digital protocol for data communications from analog devices at the subscriber destination, wherein digital signals are known to be more robust and less prone to error.

Regarding claim 78, Hoarty, Gilbert, and Williams disclose the system of claim 76, and additionally disclose an optical transceiver node including an optical converter that converts a plurality of upstream RF signals from the coaxial cable into an upstream optical signal and that transmits the upstream optical signal to the point of distribution via the optical plant (fig. 4, optical transmitter 43c receives combined upstream RF from combiner 47 for transmission to point of distribution 11).

24. Claim 62 is rejected under 35 U.S.C. 103(a) as being unpatentable over Williams in view of Gilbert.

Regarding claim 62, Williams discloses the system of claim 59, and discloses the optical plant includes an upstream optical plant (col.8, lines 19-24) and the point of distribution includes a WDM splitter (fig. 4, splitter 404) coupled to the WDM selector via the upstream optical plant (they are coupled through common connection to fiber 104, shown in fig. 4).

Williams fails to disclose the WDM splitter is coupled to each of the plurality of optical transceivers via a separate fiber optic cable.

In an analogous art, Gilbert teaches a point of deployment fig. 6, cell site 104, col. 10 line 60 – col. 1 line 5) which handles upstream/downstream communications with subscribers in a modular fashion (upstream/downstream connections with subscribers is handled by a modular modem bank, col. 11, lines 6-12), for the benefit of upgradeability and optimization of the point of deployment's capacity for communications (col. 11, lines 13-20).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Williams to implement upstream/downstream communications with subscribers in a modular fashion, as taught by Gilbert, wherein each discrete wavelength channel of upstream/downstream communication would be routed through discrete transceivers, thus the WDM splitter which receives the upstream signals would be coupled to each of the plurality of optical transceivers via a separate fiber optic cable, for the benefit of upgradeability, through the addition of more transceivers, and optimization, by matching the number of transceivers to the load requirements of subscribers, of the point of deployment's capacity for distributing information.

25. Claim 71 and 72 rejected under 35 U.S.C. 103(a) as being unpatentable over Hoarty, Gilbert, and Williams as applied to claim 67 above, and further in view of Wonfor.

Regarding claims 71 and 72, Hoarty, Gilbert, and Williams disclose the system of claim 67, but fail to disclose management and control logic that that monitors bandwidth usage for each of one of more service types and reports service type bandwidth usage to the point of distribution.

In an analogous art, Wonfor teaches monitoring at a subscriber location the use of all services for which a customer must pay for, and reports the usage of said services back to a control and billing center (col. 5, lines 15-24), for the benefit of proper billing of customers for services rendered.

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Hoarty, Gilbert, and Williams, to include tracking and forwarding bandwidth usage information from the subscriber location to the point of distribution, as taught by Wonfor, for the benefit of proper billing of customers for specifically those services rendered over the allocated bandwidth.

26. Claim 73 rejected under 35 U.S.C. 103(a) as being unpatentable over Hoarty, Gilbert, Williams, and Wonfor, as applied to claim 71 above, and further in view of McNamara and Perlman.

Regarding claim 73, Hoarty, Gilbert, Williams, and Wonfor disclose the system of claim 71, but fail to disclose the management and control logic receives a physical address request in broadcast format from a local subscriber

device and converts the request to unicast format, and forwards the unicast physical address request to the point of distribution.

In an analogous art, McNamara teaches receiving physical address requests and forming unicast format physical address request packets out of them (fig. 10, requests created in packet format are addressed to go to a specific destination, NRM 36, col. 12, lines 24-32), which are sent to the point of distribution (NRM 36 may be located any where in the network, col. 6, lines 25-38, placing it at the point of distribution would be optimal for security maintenance of the node).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Hoarty, Gilbert, Williams, and Wonfor to include receiving a physical address request and converting the request to unicast format, and then forwarding the unicast physical address request to the point of distribution, as taught by McNamara, for the benefit of learning the physical address of a device directly from a resource which knows exactly what the desired physical address is.

In an analogous art, Perlman teaches the use of Address Request Protocol messages (a broadcast packet format) as a common means by which devices which communicate with TCP/IP type protocols locate each other (col. 4, lines 41-60).

It would have been obvious at the time to a person of ordinary skill in the art to modify the system disclosed by Hoarty, Gilbert, Williams, Wonfor, and

McNamara to include receiving the physical address request in a broadcast packet format, as taught by Perlman, for the benefit of adaptably receiving address requests from devices which communicate using TCP/IP type protocols, such as computers with modems, enhancing the service by increasing the diversity of subscriber devices which it can accommodate for receiving information services.

Allowable Subject Matter

27. Claims 34-41 and 44-58 are allowed.

Response to Arguments

28. Applicant's arguments filed November 5, 2004 have been fully considered but they are not persuasive.

Regarding claim 59, applicant argues on page 22 that Williams does not teach allocating unshared bandwidth to assigned subscriber destinations (2nd paragraph), citing Williams teaches dynamically assigning bandwidth on an as needed basis (1st paragraph). The citied portion of Williams does in fact teach allocating unshared bandwidth to assigned subscriber destinations, as the bandwidth allocated to the subscriber destination (the assigned wavelength and timeslot found in col. 11 line 47 – col. 12 line 6) is used exclusively by said subscriber destination for the duration it is needed (such as for a telephone call),

and simply put, no other subscriber destination utilizes that same portion of bandwidth in the intern, thus it is unshared.

Regarding claim 63, applicant argues that Hoarty does not disclose each subscriber destination is assigned an unshared bandwidth allocation, stating the "virtual channels" are assigned to users, and not the fixed frequency over which they are transmitted. The section in Hoarty cited, col. 8, lines 40-49, clearly states that the virtual channels represent the many types of content available to a single user over a fixed frequency which is assigned to said user. It is this fixed frequency which is the allocated, unshared bandwidth.

29. Applicant's arguments with respect to claim 1 (page 24) have been considered but are moot in view of the new grounds of rejection. The newly added limitations more narrowly define what is meant by the phrase "unshared bandwidth", thus necessitating the new grounds herein regarding claim 1. The previous usage of "unshared bandwidth" was applied to the secure, unshared usage of bandwidth between a source node (a content supplier) and a destination node (subscriber) as described in McNamara (col. 7 line 42 – col. 8 line 24).

30. Applicant's arguments with respect to claim 22 (page 25) have been considered but are moot in view of the new grounds of rejection. The newly added limitation of "a

plurality of subscriber devices at the subscriber location" (claim 22, lines 28-29) was not previously claimed, and thus necessitates the new grounds herein regarding claim 1.

31. The following are suggested formats for either a Certificate of Mailing or Certificate of Transmission under 37 CFR 1.8(a). The certification may be included with all correspondence concerning this application or proceeding to establish a date of mailing or transmission under 37 CFR 1.8(a). Proper use of this procedure will result in such communication being considered as timely if the established date is within the required period for reply. The Certificate should be signed by the individual actually depositing or transmitting the correspondence or by an individual who, upon information and belief, expects the correspondence to be mailed or transmitted in the normal course of business by another no later than the date indicated.

Certificate of Mailing

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on __________.
(Date)

Typed or printed name of person signing this certificate:

____

Signature: ________________________________

Certificate of Transmission

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office, Fax No. (703)_____ - ________ on _____________.
(Date)

Typed or printed name of person signing this certificate:

____

Signature: ________________________________

Please refer to 37 CFR 1.6(d) and 1.8(a)(2) for filing limitations concerning facsimile transmissions and mailing, respectively.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dominic D Saltarelli whose telephone number is (703) 305-8660. The examiner can normally be reached on M-F 10-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Grant can be reached on (703) 305-4755. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dominic Saltarelli
Patent Examiner
Art Unit 2611

DS

Chris Grant

CHRIS GRANT
PRIMARY EXAMINER